United States Patent

[11] 3,598,230

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[33] **Great Britain**
[31] **28282/68**

[54] APPARATUS FOR DISTRIBUTING LUGGAGE PARCELS AND THE LIKE

8 Claims, 5 Drawing Figs.

[52] U.S. Cl. 198/181
[51] Int. Cl. B65g 17/24
[50] Field of Search 198/195, 197, 181, 102, 103; 104/25

[56] References Cited

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1,412,896	4/1922	Sachs	104/25
3,361,249	1/1968	Cadman et al.	198/103

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ABSTRACT: This invention relates to luggage distribution apparatus in the form of an endless moving conveyor comprising a number of slats which slope transversely to the direction of movement of the conveyor. Bracing members are connected between the slats to facilitate the driving and guiding of the conveyor.

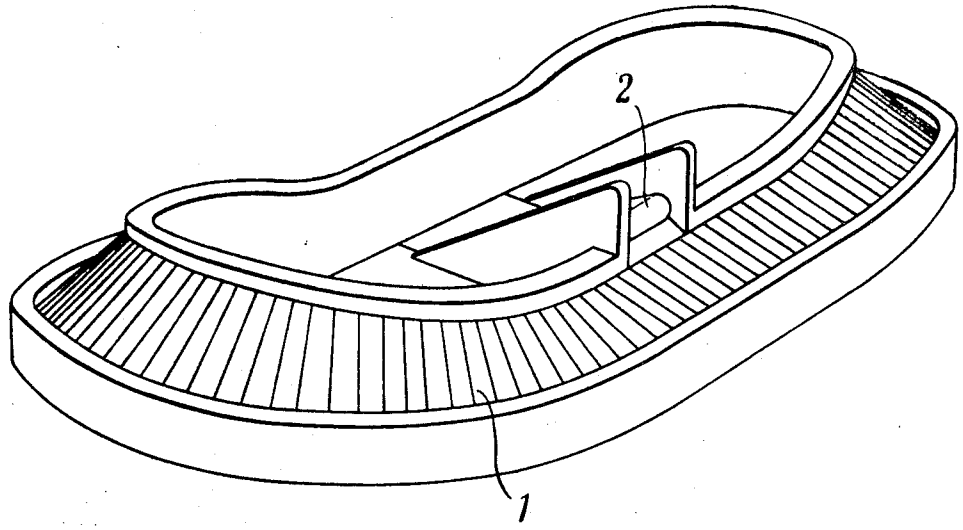

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FIG.1.

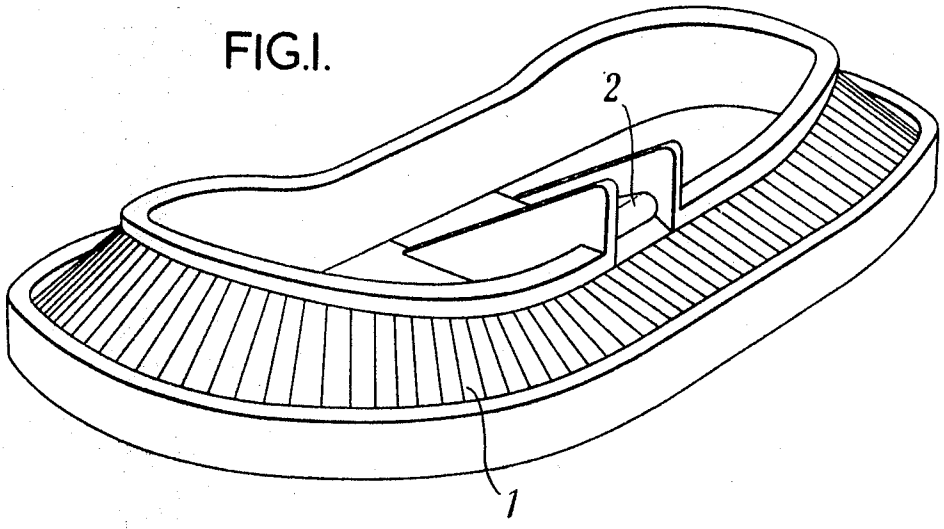


FIG.4.

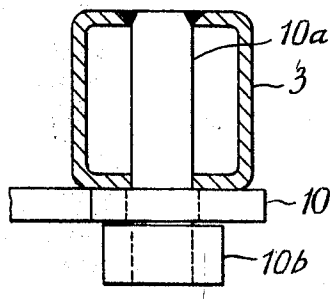
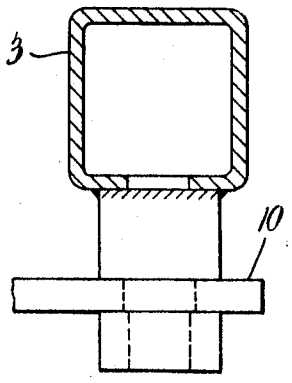


FIG.5.



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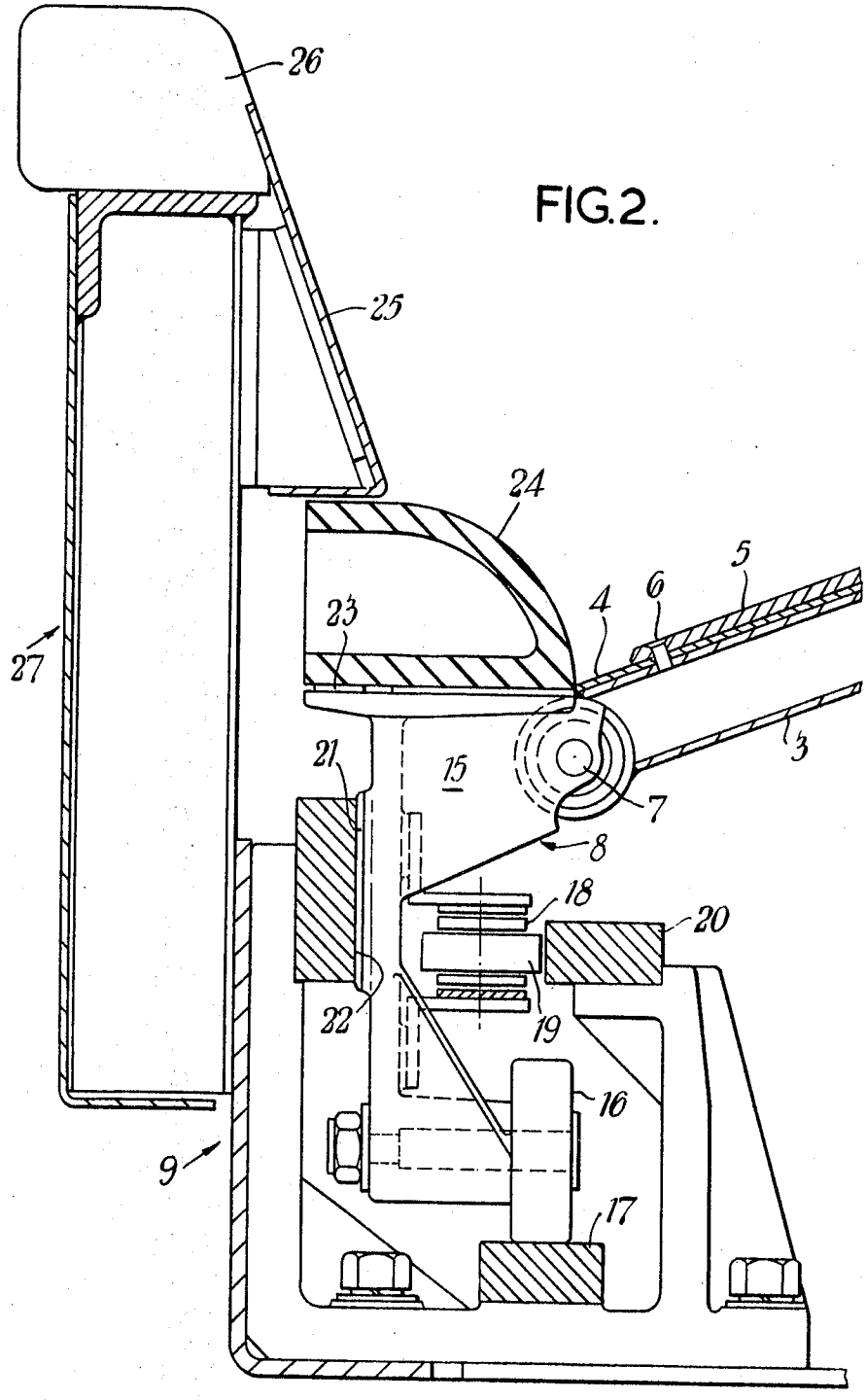

FIG.2.

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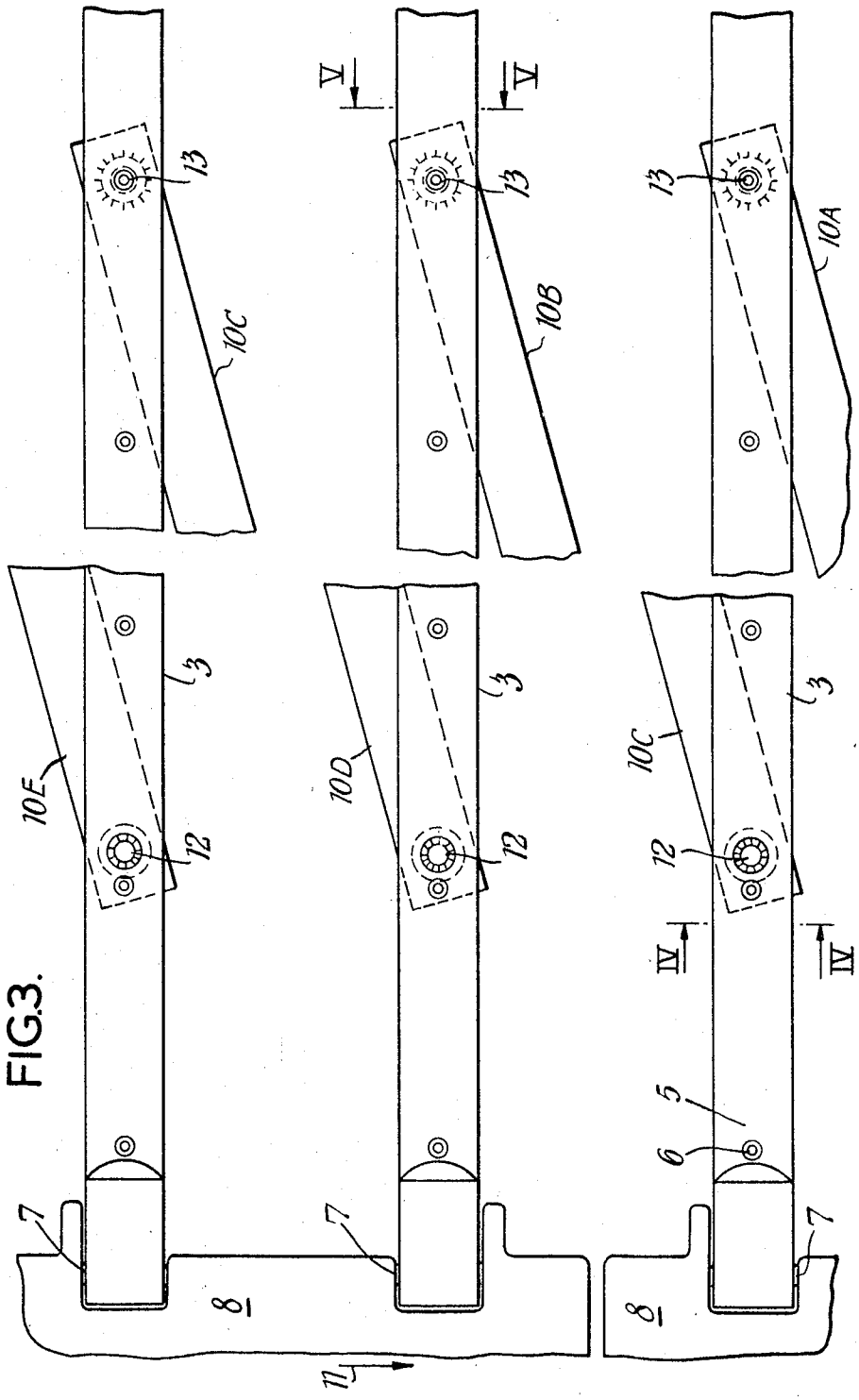

FIG.3.

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APPARATUS FOR DISTRIBUTING LUGGAGE PARCELS AND THE LIKE

This invention concerns improvements in and modifications of the apparatus forming the subject of our U.S. Pat. No. 3,361,249.

In this earlier patent there is described and claimed apparatus for distributing and/or for facilitating the sorting of luggage, parcels and like articles, comprising a moving article-reception surface having a slope, transversely of the direction of movement, which differs as between one place and another, and means for feeding articles to the reception surface at a place where the slope is smaller.

The form of article-reception surface described in the aforementioned patent includes a series of transversely extending sloping rods or slats driven at their lower ends by a chain and guided at their upper ends so that as they move they adopt different attitudes to impart to the article-reception surface the desired slopes at the different places.

According to the present invention an improvement of the article-reception surface described in the preceding paragraph is brought about by the provision of bracing members in the form of ties or struts each of which is connected to the lower end of one rod or slat and to the upper end of another rod or slat.

The sloping rods or slats of the article-reception surface described in our earlier patent are bridged by two-layer flexible material between the layers of which compressible bodies of sponge rubber or long inflated air bags are arranged which by their deformation permit the spacing of the sloping rods or slats to vary to accommodate the different slopes of the article reception surface. According to a further feature of the present invention a modification of this arrangement comprises simply bridging the rods or slats with flexible web material, which where the slope is smallest is relatively taut between the rods or slats and where the slope is greatest will therefore sag between the rods or slats. In further development of this modified construction, the flexible web material may be trapped on the rods or slats by clamping strips which extend along the rods or slats and are secured thereto at intervals, for example by rivets. Thus the clamping strips will by their upper surfaces define the actual surfaces down which the articles will slide. Advantageously these upper surfaces of the clamping strips may be coated with polytetrafluoroethylene to give them a substantially common and low coefficient of dynamic and static friction.

Along the lower edge of the article-reception surface described in our earlier patent an upstanding flexible skirt extends and moves with the article-reception surface. In a modification of this arrangement according to a further feature of the present invention, the moving skirt is replaced by a cushion or buffer, for example a hollow rubber moulding, which moves with the article-reception surface and against which articles sliding down the surface will collide to prevent them engaging the stationary side structure of the apparatus.

One construction of apparatus embodying the improvement and modifications of the invention will now be described by way of example with reference to the accompanying drawings, in which:

FIG. 1 corresponds to FIG. 1 of our earlier patent specification and is a perspective view of the general form of apparatus,

FIG. 2 is a fragmentary sectional view showing the arrangement at the lower end of the sloping bars of the construction,

FIG. 3 is a partially cutaway plan view of the sloping bars and bracing members,

FIG. 4 is a sectional view on the line IV–IV of FIG. 3, and

FIG. 5 is a sectional view on the line V–V of FIG. 3.

Referring now to the drawings, the article-reception surface illustrated is an endless, continuously moving conveyor 1 of oblong annular form as seen in plan view. The surface has parts of moderate slope transversely to the direction of movement along the long sides and parts of greater slope at the semicircular ends. Articles are fed on to the reception surface at its upper, inner edge, by an endless-belt conveyor 2 which delivers the articles at the middle or one end of one long side where the slope is moderate.

The article-reception surface comprises a plurality of rods 3 of hollow rectangular cross section, which extend transversely to the direction of movement of the conveyor 1 and over which is laid an endless fabric belt 4 (FIG. 2) secured to the rods 3 by clamping strips 5. The clamping strips 5 extend along the rods 3 and are secured thereto at intervals by rivets 6 to trap the fabric belt 4 in position. These clamping strips 5 are preferably either made of low friction material such as nylon for example, or are coated with a low friction material on their upper side. The fabric belt 4 is fitted to the rods 3 so that at the places of moderate slope it is taut between the bars and at the places of greater slope where the rods 3 come closer together it sags between the rods 3.

At their upper ends the rods 3 are supported by rollers (not shown) running in a channel-shaped guide (not shown) which extends around the inner edge of the surface of the conveyor 1 and rises and falls to give the conveyor surface the desired transverse slope. This form of support is substantially the same as that described in our earlier patent. At their lower ends the rods 3 are pivotally connected at 7 to chain driven trolley members 8 moving in a stationary guiding structure 9.

As can be most clearly seen in FIGS. 3 to 5, the rods 3 are braced one to another by bracing members 10 forming ties or struts which have a slight degree of flexibility. In FIG. 3 the different bracing members have been given the different suffix letters A, B, C, D and E so that it is clear that the particular example shown the bracing members are pivotally mounted at 12 to the lower end of one rod 3 and pivotally mounted at 13 to the upper end of the next but one trailing rod 3, assuming that the conveyor is moving in the direction of the arrow 11; the bracing members 10 thus act as ties. The form of pivotal connections at 12 and 13 are illustrated in FIGS. 4 and 5 respectively and it will be seen that in the vertical plane the bracing members 10 diverge slightly from the rods 3 in the direction from their lower to their upper ends. Thus, each member 10 is connected at its upper end to a rod 3 in the manner shown in FIG. 4, but is connected at its lower end to a rod 3 as shown in FIG. 5. The connection means shown in FIG. 4 comprises a threaded pin which is rigidly secured to rod 3 and passes through an aperture in member 10. Member 10 is provided with a rubber bushing 10B which has bonded thereto a concentric hardened steel ring 10C. A nut 10A secures the member 10 on pin 10A. In FIG. 5, on the other hand, the rod 3 is shown as having a depending boss with a threaded portion 14A onto which is threaded the nut 14D. Bushing 14B and hardened ring 14C are provided in the same manner as in FIG. 4. The means of FIGS. 4 and 5 ensures that each member 10 will be disposed sufficiently below the adjacent rods 3 so as to avoid interference therebetween even when the rods are deflected downwardly under load. Preferably rubber bushings (not shown) are provided, surrounding the pivotal link between the ends of the members 10 and the rods 3. It has been found that this arrangement of the bracing members 10 together with their slight flexibility and a slight looseness of the pivot connections at 7 enables a driving of the conveyor through the single chain 18 at the lower end of the rods 3 which is simpler, quieter and superior to synchronously driven chains at the upper and lower edges of the rods 3.

As shown in FIG. 2 the trolley members 8 each comprise a casting 15 carrying the pivot connections 7 and having a supporting roller 16 running on a track 17 of the stationary guiding structure 9. The casting 15 is tied to the driving chain 18 and is guided laterally on one side by rollers 19 on the chain running against the vertical track 20 of the stationary guiding structure 9. The casting is guided laterally on its other side by shoe 21 running against a vertical guide surface 22 of the guiding structure 9.

At its upper end the casting is shaped to define a platform 23 on which is secured a rubber buffer or cushion 24 in the form of a hollow rubber moulding extending continuously

around the outer lower edge of the conveyor surface. The outer edge of the conveyor surface including a portion of the buffer **24** extends beneath a skirt **25** which depends downwardly from a sill **26** forming part of a stationary outer wall structure **27** of the conveyor.

I claim:

1. Apparatus for distributing and/or for facilitating the sorting of articles of the nature of luggage, parcels and the like comprising,

an endless moving article reception surface having a slope transversely of the direction of movement which differs between one place and another,

means for feeding articles to the reception surface at a place where the slope is smaller,

said article reception surface including a series of transversely extending sloping elongate rods driven at their lower ends and guided at their upper ends, and

a plurality of bracing members each of which is pivotally connected between the lower end of one rod and the upper end of another rod.

2. Apparatus as claimed in claim **1**, wherein flexible bushings are provided at the connection between each bracing member and the respective rods pivotally connected thereto.

3. Apparatus as claimed in claim **1**, wherein the rods or slats of the reception surface are bridged with a flexible web material.

4. Apparatus as claimed in claim **3**, wherein the flexible web material is trapped on the rods or slats by clamping strips which extend along the rods or slats and are secured thereto at intervals.

5. Apparatus as claimed in claim **4**, wherein the upper surfaces of said clamping strips are of a low friction material.

6. Apparatus as claimed in claim **1**, wherein a resilient cushion is arranged along the lower edge of said article reception surface.

7. Apparatus as claimed in claim **6**, wherein said resilient cushion is in the form of a hollow rubber molding.

8. The apparatus of claim **1** in which said bracing members are sufficiently spaced below said rods to avoid interference with the adjacent rods as said rods deform under load.